2/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131287

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO WISTAR RATS ON THE SEVENTH DAY AFTER IRRADIATION (CO PRIME60 GAMMA RAYS, 600 R, 6 R PER SEC) SEROTONIN CREATININE SULFATE IN A DOSE OF 0.1 MG-KG WAS INJECTED INTO THE SUBCUTANEOUS FEMORAL VEIN. TWO THREE MINUTES AFTER SEROTONIN INJECTION THE AUTHORS DETERMINED IN THE BLOOD THE AGGREGATION OF BLOOD PLATELETS AND SOME INDICES OF THE BLOOD COAGULATION. SEROTONIN EXERTS NO ESSENTIAL INFLUENCE ON THE INDICES STUDIED IN IRRADIATED RATS. AN ASSUMPTION COULD BE MADE THAT DISTURBANCES OF AGGREGATION OF BLOOD PLATELETS AND THE BLOOD COAGULATION PROCESS IN ACUTE RADIATION SICKNESS IS NOT ASSOCIATED WITH REDUCED SEROTONIN CONCENTRATION IN THE BLOOD.

FACILITY: INSTITUTE OF MEDICAL RADIOLOGY OF THE ACADEMY OF MEDICAL SCIENCES OF THE USSR, OBNINSK.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002201310019-2"

AA0 036112

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UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

241171 RELEASABLE CHILLING SEALING ensuring better hermeticity with respect to the flow of molten metals and alloys, where a sealing agent is introduced into the sealing zone under pressure. This is followed by introduction of a coolant which chills hermetically the molten metal or alloy to a desired extent.

3.5.67 as 1151542/25-8. V.I. KHNYGIN (15.8.69)
Bul 13/1.4.69. Class 47f. Int.Cl.F 16j.

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KHNYKIN, Yu. F.

LiFe Support Systems

So: JPRS 53448
24 Jun 71

UDC 613.32:629.78.048

ARTIFICIAL MINERALIZATION OF WATER REGENERATED DURING SPACEFLIGHT

(Article by M. I. Shikina, S. V. Chikhov, V. V. Kraeposhchekov, T. I. Aladinskaya, N. A. Golikova and Yu. F. Khnykin, Moscow, Kosmicheskaya biologiya i meditsina, Russian, Vol 5, No 2, 1971, pp 28-31, submitted for publication 12 February 1970)

Abstract: Data published in the Soviet and foreign literature indicate a need for adding minerals to the water regenerated from human wastes during spaceflight. The paper presents experimental findings concerning the mineralization of regenerated water with solid-phase salts, powdered $2\,CaO{\cdot}3SiO_2$, and salt tablets. This method has certain advantages over current techniques, yielding drinking water with better organoleptic properties and superior physicochemical composition.

Since drinking water can be obtained during spaceflight by means of its regeneration from the products of man's vital functions and waste, hygienists are faced with the serious problem of ensuring that the regenerated water will have the required palatability and chemical composition.

It is known that in its composition regenerated water is close to distilled water and is characterized by the absence of mineral compounds present in natural drinking water which are physiologically important for the human body (Yu. Ye. Sinyak).

The biological role of most macro- and microelements present in water has been studied quite well (A. I. Voyner; R. D. Gabovich).

It is well known that food plays the principal role in supplying the body with mineral compounds. However, it has been established through research that the inadequate intake of individual mineral components with water can also exert a negative effect both on its organoleptic properties and on a number of body physiological functions (L. I. Shelukhin; Margaret). For example,

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--HEMODYNAMIC SHIFTS IN THIOPENTAL SODIUM INFUSION ANESTHESIA -U-

AUTHOR-(02)-KHNYKINA, V.I., SHANIN, YU.N.

COUNTRY OF INFO--USSR

SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA, 1970, NR 3, PP 69-74

DATE PUBLISHED----------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ANALGESIC DRUG, ANESTHESIA, BARBITURATE, ORGANIC SULFUR COMPOUND, HEMODYNAMICS, SURGERY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1014 STEP NO--UR/0481/70/000/003/0069/0074

CIRC ACCESSION NO--AP0126652

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0126652
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEMODYNAMIC SHIFTS CAUSED BY THIOPENTAL SODIUM WERE STUDIED BY MEANS OF MECHANOCARDIOGRAPHY IN 60 PATIENTS. UNDER INVESTIGATION WERE THE FEATURES SPECIFIC TO HEMODYNAMIC SHIFTS IN EMERGENCY OPERATIONS IN PATIENTS OVER 40 YEARS, DEPENDING UPON THE PRINCIPAL DISEASE. PRIOR TO ANESTHESIA THE CIRCULATORY FUNCTION WAS STRAINED IN ALL THE PATIENTS, AND WAS PRESERVED IN EMERGENCY INTERVENTIONS AFTER THE INTRODUCTION OF THIOPENTAL SODIUM. IN PATIENTS OVER 40 YEARS BOTH BEFORE ANESTHESIA AND DURING THIOPENTAL SODIUM ANESTHESIA THERE ARE SEEN CHARACTERISTIC HEMODYNAMIC FEATURES, "INERTENSS" OF THE PULSE, HIGH TENSION OF ARTERIES. IN PATIENTS WITH INJURIES AT THIS PERIOD HYPOTENSION IS POSSIBLE, CAUSED BY REDUCTION OF THE VASCULAR TENSION. THE MOST MARKED CHANGES OF THE CARDIAC OUTPUT AND PERIPHERAL RESISTANCE ARE IN PATIENTS WITH VOLVULUS. FACILITY: KAFEDRA GOSPITAL'NOY KHIRURGII PETROZAVODSKOGO UNIVERSITETA IM. KUUSINENA, PETROZAVODSKAYA GOROSKAYA BOL'NITSA I. FACILITY: OTDELENIYE REANIMATOLOGII KAFEDRY GOSPITAL'NOY KHIRURGII VOYENNO-MEDITSINSKOY AKADEMII IM. S. M. KIROVA.

UNCLASSIFIED

Acc. Nr. AP0047692 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code UR0136

92428h Bases of the process for updraft sintering of lead charges. Novoselov, S. S.; Khobdabergenov, R. Zh.; Bryukhanov, N. G.; Kukharev, A. K. (USSR). *Tsvet. Metal.* 1970, 43(1), 8–13 (Russ). The updraft sintering of Pb concs. was studied. The operation required careful prepn. of the charge, esp. the maintenance of the concn. of S at 6.5–7.5 and moisture at 5.5–6.5%, addn. of recycled material 160–70 wt. % of the conc., and particle size −10 mm. Addn. of −3-mm conc. 0.8-1% of the charge was necessary to maintain 1000–1100° in the combustion zone, since the temp. could not be controlled by the S concn. only. Addn. of conc. decreased the sinter S concn., improved the S elimination, and enhanced the quality and [illegible] of sinter.

E. M. [illegible]

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REEL/FRAME
19791268

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1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--CONTINUOUS EXTRACTION OF COPPER FROM LEAD AT THE CHIMKENT LEAD PLANT -U-

AUTHOR-(02)-SMIRNOV, M.P., KHOBDABERGENOV, R.ZH.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(5), 31-4

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--COPPER, LEAD, BISMUTH, SILVER, GOLD, ANTIMONY, METAL SEPARATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1899

STEP NO--UR/0136/70/043/005/0031/0034

CIRC ACCESSION NO--AP0132161

UNCLASSIFIED

2/2 015 UNCLASSIFIED

CIRC ACCESSION NO--AP0132161 PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE METHOD IS BASED ON THE COMBINING OF 2 PROCESS OF LIQUATION AND SULFIDIZATION OF CU IN ONE REVERBATORY FURNACE WITH DIRECT TRANSFER OF CU INTO A COM. MATTE. DETAILS OF THIS METHOD ARE DESCRIBED BY S., ET AL. (1966). BEFORE THE INTRODUCTION OF THIS PROCESS, THE MATTE CONTAINED PB 10 AND CU 20PERCENT, THE EXTN. OF PB INTO SOFT METAL WAS 76.4PERCENT, AND EXTN. OF CU INTO COM. MATTE WAS 73.54PERCENT. IN 1968, THE COM. MATTE CONTAINED PB 14.5 AND CU 60PERCENT. THE EXTN. OF PB INTO SOFT METAL WAS 88.4PERCENT AND THE EXTN. OF CU INTO COM. MATTE WAS 80.75PERCENT. IN ADDN., THE LOSSES OF SB, BI, AG, AND AU WERE REDUCED.

UNCLASSIFIED

KHOBOTOV, A. P.

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82

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 2-70

236489 AIR HUMIDIFIER comprises body connected by pipelines to a topping-up connection, tubular evaporating elements, an air duct formed by the inter-tube space and diffusors, and a ventilator set in a diffusor, having in its body levelling valves and compensatory elements in the form of rubber bulbs, within which are tubes with apertures on the surface. The working cavities of the body and the tubular evaporating elements are filled with hygroscopic material of wick type. On the topping-up connection is a removable filter filled with ion-exchange resins. This enables the device to work independently from a high pressure source. Air from the cabin is sucked up by the ventilator and goes via the diffusor into the inter-tube space, where it passes round the tubular evaporating elements, through the pores of which water is constantly evaporated into the air flow. From the inter-tube space the humidified air is ejected into the cabin. The evaporation of water from the pores of the tubular evaporating elements is due

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to the psychosometric temperature difference. The rate of evaporation of the water automatically increases or decreases as the humidity of the incoming air decreases or increases, i.e. the cabin air is kept properly humidified without automation equipment. The device is applicable to air conditioning systems of aircraft.
30.10.67 as 1193827/40-23 VORONIN G.I. et al.
(17.69) Bul. 7/3.2.69. Class 17f, 62c, Int. Cl.
F 25h, B 64d.;

Authors: Voronin, G.I.; Sharov, Yu.K.; Zav'yalov, Yu.F.; Fiks, A.R.; Matov, A.A.; Khobotov, A.P.

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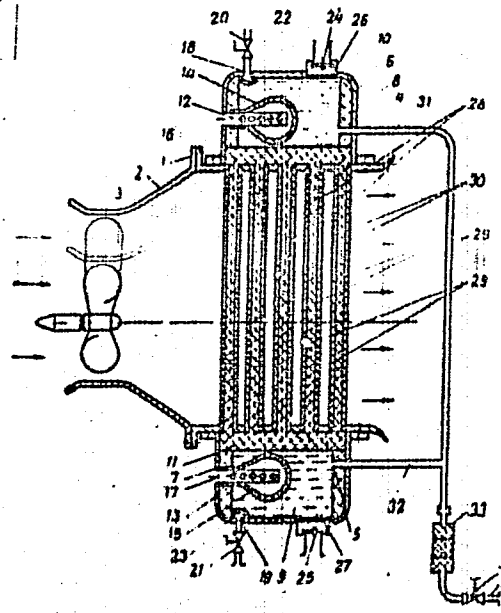

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19820252

Hydrobiology

UDC 576.8.097.29:591.524.1

USSR

STROGANOV, N. S., KHOBOT'YEV, V. G., KOLOSOVA, L. V., KOCHKIN, D. A., and EL'KHANOV, G. E., Chair of Hydrobiology, Moscow State University imeni M. V. Lomonosov, Moscow

"The Toxic Action of Some Organometallic Compounds on Aquatic Life. II. The Action of Alkyl(aryl) Lead-Organic Compounds"

Moscow, Nauchnyye Doklady Vysshey Shkoly, Biologicheskiye Nauki, No 3, 1971, pp 21-24

Abstract: The action of the compounds Me_3PbCl (I), Me_2PbCl_2 (II), Et_3PbOH (III), and Ph_4Pb (IV) on the algae Scenedesmus quadricauda and Chlorella vulgaris and the crustacean Daphnia magna was studied. I, II, and III were more toxic towards the Daphnia than the algae, whereas IV was more toxic towards algae, exerting an algicidal effect even in a concentration of 0.01 mg/l, while producing no toxic action on the Daphnia in concentrations ≤ 8 mg/l. A compound with a selective action such as that of IV can be used for the control of aquatic life in industrial water reservoirs in cases in which the blooming of water must be suppressed, while it is desirable to preserve the propagation of the zooplankton. Water from reservoirs of this type is used neither for drinking nor for household purposes.

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UDC 576.8.097.29:591.524.1

USSR

STROGANOV, N. S., KHOBOT'YEV, V. G., KOCHKIN, D. A., KOLOSOVA, L. V., and EL'KHANOV, G. E., Chair of Hydrobiology, Moscow State University imeni M. V. Lomonosov

"Toxicity of Some Organometallic Compounds for Hydrobionts. I. The Effect of Alkylmethacryloxyplumbanes"

Moscow, Nauchnyye Doklady Vysshey Shkoly, Biologicheskiye Nauki, No 10, 1970, pp 13-17

Abstract: Experiments with organolead derivatives, tri- and di alkylmethacryloxyplumbanes showed that these compounds are a thousand times more toxic to the crustacean Daphnia magna Strauss than to the algae Scenedesmus quadricauda and Chlorella vulgaris. Even at concentrations of 0.001 mg/liter, the survival rate of the crustaceans was 10 to 75% lower than that of the controls. The compounds were toxic to the algae only at concentrations of 0.5 to 1 mg/liter or higher. The survival rate of the crustaceans in solutions of the substances was very low by the 15th day, whereas the number of algae decreased by only 50% during this time. Toxicity was clearly manifested only at the 30th day, when the number

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STROGANOV, N. S., et al, Nauchnyye Doklady Vysshey Shkoly, Biologicheskiye Nauki, No 10, 1970, pp 13-17

of cells decreased sharply. These results suggest that alkylmethacryloxy-plumbanes might be used in commercial bodies of water to suppress the population of certain zooplankton organisms.

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USSR UDC 616.981.553-085

KHOCHAVA, A. I. and KOMAR, V. I., Chair of Infectious Diseases, Grodno Medical Institute

"Clinical Picture and Therapy of Botulism"

Minsk, Zdravookhraneniye Belorussii, No 4, 1971, pp 30-32

Translation: The incidence of botulism has slightly increased in recent years owing to the popularity of home canning of foods and mistakes made in the canning process (V. A. Shalygin and A. I. Maslovskiy, 1967; Ye. G. Popkova and T. V. Duka, 1968; et al). Between 1966 and 1968 20 persons with botulism (5 children and 15 adults) treated in various hospitals of Grodno Oblast were observed. Eight became infected by eating mushrooms canned at home, three by eating canned vegetables (lecho, green peas), and nine by eating a variety of canned meat products. Nine became sick in October and November, 10 in March, April, and May, and one in June. Botulism was diagnosed in a polyclinic in only three persons, while the other patients were treated as outpatients for acute gastritis, sore throat, acute respiratory disease, myopathy, and so forth. Since the treatment was ineffectual, the patients were sent to a hospital with a tentative diagnosis of botulism. The patients were admitted

USSR

KHOCHAVA, A. I., et al, Zdravookhraneniye Belorussii, No 4, 1971, pp 30-32

at different times: two on the 2nd day of the disease, four between the 3d and 5th days, eight between the 6th and 10th days, two after the 10th day, and five after the 20th day. No relationship was detected between the length of the incubation period and the severity of the disease. It lasted 24 hours in four patients, 2 days in 11, 3 days in two, and about 5 days in three. The disease was mild in six, moderately severe in 12, and severe in two. The disease set in acutely with general weakness, headache, vertigo, nausea, vomiting, pronounced dryness of the mouth, and pain in the epigastrium. Thirteen had a distended abdomen and 16 suffered from constipation. The stools were frequent, liquid, and watery during the first two days of the disease in six patients who subsequently developed constipation. The characteristic eye symptoms appeared in 17 patients after 2 or 3 days: deterioration of vision ("mist in the eyes", "screen before the eyes"), double vision, and blurring of printed letters while reading. The pupils were dilated in 16 cases and the reaction to light was sluggish. Anisocoria was noted in two cases, ptosis in five cases and in two of those with a severe course of the disease, the ptosis was intense and protracted. From the onset of the disease 14 patients found swallowing painful and difficult and two with a severe course developed paresis

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USSR

KHOCHAVA, A. I., et al, Zdravookhraneniye Belorussii, No 4, 1971, pp 30-32

of the facial nerve. In the acute phase muscle tone decreased sharply in six patients. Abdominal reflexes were weak in four patients with a moderately severe form of the disease and nonexistent in two with a severe course. The heart tones were dull in 11 and tachycardia was noted in 10. Arterial pressure remained more or less unaffected. There were no changes in the lungs. The liver was enlarged in three patients. The body temperature rose to 38°C to 38.5°C in five patients during the first few days of the disease. An elevated temperature at the onset of botulism is mentioned by N. S. Slutskiy et al. (1934), P. F. Changli-Chaykin (1937), and K. V. Bunin and N. I. Rashba (1962). Ten patients had moderate leukocytosis and neutrophilosis with a shift to the left. Two patients with a severe course had transient albuminuria. No differences were observed in the clinical picture of the disease in relation to the nature of the food products responsible. All the patients were given antibotulinus serum (from 10,000 to 40,000 IU types A, C, E and 5000 to 20,000 type B) to be injected intramuscularly. Those with a moderately severe or severe form did not show a distinct clinical effect until 3 to 4 days after receiving the serum. Those with a mild course were given the serum only once. It was injected intravenously into one patient with a severe course and into three others with a moderately severe course because they were admitted

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USSR

KHOCHAVA, A. I., et al, Zdravookhraneniye Belorussii, No 4, 1971, pp 30-32

late to the hospital. The serotherapy was generally combined with desensitizing agents (calcium gluconate, dimedrol, pipolphen) and antibiotics (penicillin, tetracycline). All received gastric lavages and enemas. Patients with a moderately severe or severe form of the disease were given intravenous infusions of physiological saline, 5% glucose with ascorbic acid, and vitamins B_1, B_6, and B_{12} intramuscularly. Five patients were given prednisolone and four of them received in addition antibotulinus serum intravenously. Analeptics (cardiamine, corazole, pentylenetetrazolm, strychnine) and anticholinesterase agents (neostigmine) were prescribed when indicated. General improvement set in starting on the 3d or 4th day of treatment. Dyspeptic phenomena disappeared, general weakness, dryness in the mouth, and difficulty in swallowing diminished, but vision was restored slowly. The main symptoms of the disease intensified in four patients after they had improved clinically, so that they were again given antibotulinus serum. Three patients with a severe or moderately severe course developed complications in the form of severe myocarditis, while four developed mild serum sickness 5 to 8 days after the start of serotherapy. Recovery set in after 2 to 3 weeks in those with a mild

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KHOCHAVA, A. I., et al, Zdravookhraneniye Belorussii, No 4, 1971, pp 30-32

form, after 4 to 5 weeks in those with a moderately severe form, and after 2 months in those with a severe form. One 4-year-old child with a very severe form dies. He had been admitted on the 2d day of the disease with a diagnosis of encephalitis and did not respond to serotherapy. The diagnosis was confirmed by laboratory tests in only three patients (type E botalism). Despite the fact that even the mild forms of botulism produced the characteristic clinical picture, in two patients the ophthalmoplegic phenomena were considered apart from anamnesis and they were treated for one month by an ophthalmologist for myopia. In another patient, marked neurological symptoms in the form of paralysis of the soft palate, ptosis, impaired vision, dysphagia, and respiratory disorders were regarded as encephalitis. Two patients with complaints of dryness of the mouth and difficult and painful swallowing were treated on an outpatient basis for acute respiratory disease.

Conclusions

1. The clinical symptoms of botulism are sufficiently characteristic to warrant an unerring diagnosis.

USSR

KHOCHAVA, A. I., et al, Zdravookhraneniye Belorussii, No 4, 1971, pp 30-32

2. Severe and moderately severe forms of the disease are often complicated by severe myocarditis.

3. Serotherapy, even if initiated late, has a distinct therapeutic effect, but recurrences are possible.

4. Steroid hormones should be part of the comprehensive therapy of the moderately severe and severe forms of botulism.

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USSR

UDC: 621.3.049.75

SEYSYAN, R. P., KHODAK, I. Ya.

"A Method of Making Gaps"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 10, Apr 71, Author's Certificate No 298086, Division H, filed 8 Sep 69, published 11 Mar 71, p 197

Translation: This Author's Certificate introduces a method of making gaps between electrodes in thin-film microcircuits produced by the method of photolithography. As a distinguishing feature of the patent, small gaps are made by using a phototemplate in which the elements of the drawing are two equal triangles joined at the corners. Two sides of one of these triangles are extensions of the other triangle, and the size of the gap is controlled by changing the angle at the vertex of the triangle as well as the etching time.

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Acc. Nr: AP0049906 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code: UR0492

102190r Analysis of the operation of isobutane columns. Rudov, G. Ya.; Chekhov, O. S.; Ovchinnikov, P. A.; Khodak, V. S. (USSR). *Gazov. Prom.* 1970, 15(1), 38-40 (Russ). An anal. was conducted on 4 com. distn. columns for the sepn. of iso- from *n*-butane in a light hydrocarbon mixt. Columns 1 and 2 (diam. 240 cm) were of the bubble-cap tray type and operated with the feed entering trays no. 38, 40, and 42. Columns 3 and 4 (diam. 180 cm) were of the slotted grid-plate type and operated with the feed entering plates no. 42, 46, and 50. The pressure of the system was 7 atm. The free cross-section areas were ~25% of the tray or plate areas. Some data obtained on columns 1, 2, 3, and 4 were, resp.: iso-C_4 in the feed 22.0, 32.0, 29.0, and 23.0 wt. %; feed rate 5.0, 10.0, 3.7, and 12.0 ton/hr; reflux rate 36.0, 41.0, 37.5, and 60.0 ton/hr; iso-C_4 distillate rate 1.1, 2.4, 0.9, and 2.8 ton/hr; iso C_4 distillate compn. (C_3) 4.0, 0.9, 3.5, 0.9, (iso-C_4) 95.0, 98.8, 95.5, 98.8, (*n*-C_4) 1.0, 0.3, 1.0, 0.3 wt. %; residue stream rate 3.9, 7.6, 2.8, and 9.2 ton/hr; residue stream compn. (C_3) 5.0, 6.8, 4.0, 6.8, (iso-C_4) none, (*n*-C_4) 95.0, 93.2, 96.0, 93.2 wt. %. The calcd. values for the stripping sections of columns 1, 2, 3, and 4 were,

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REEL/FRAME
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AP0049906

resp.: reflux ratio 33.0, 18.0, 41.0, 21.5 to 1.0; vapor velocity in the free cross section 0.15, 0.18, 0.26, and 0.41 m/sec; liq. velocity in the free cross section 0.075, 0.135, —, — m/sec; equation for the flow pattern $y = 1.10x - 0.0051$, $1.14x - 0.0099$, $1.07x - 0.0029$, and $1.15x - 0.0030$. Correlating equations were developed for detg. the actual no. of trays operating in the stripping section; and the mass-transfer coeff., $K_{y/}$ for both the vapor and liq. phases, expressed as (kg mole)/(m² hr), where m² is the area of a bubble-tray. Values of $K_{y/}$ for the vapor phase of the stripping sections of columns 1, 2, 3, and 4 were 34, 74, 78, and 134, resp. Values of $K_{y/}$ are in good agreement with the mass-transfer coeff., $\beta_{y/}$ calcd. by the method of V. A. Ivanov, *et al.* (*CA* 67: 118601h). A new type of fractionating tray is proposed, which includes 2 zones of vapor–liq. contact, higher velocity of vapor in the free cross section of the tower, and a spacing of 500 mm between trays. L. U. Franklin

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UDC 669.71'781.018.9

NAPALKOV, V. I., KHODAKOV, P. Ye., and MITVOL', L. S.

"Preparation of Aluminum-Boron and Aluminum-Titanium-Boron Alloys"

Tekhnol. legkikh splavov. Nauchno-tekhn. byul. VILSa (Technology of Light Alloys. Scientific and Technical Bulletin of All-Union Institute of Light Alloys), 1970, No 3, pp 95-97 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No G240 by S. KRIVONOSOVA)

Translation: The article considers the increasing of boron assimilability during the preparation of alloys. The assimilability of boron into aluminum from B_2O_3 under a layer of cryolite at 1200° in a 30-minute period if 50% (with a 1:1 ratio of these substances), and from KBF_4 under a layer of KCl at 950-970° in a 60-minute period, 75-92%. An alloy of aluminum with titanium and boron is made by introducing titanium and KBF_4 shavings under a layer of KCl. Two tables.

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KHUDAKOV, V.G.

Hydrology

GLACIERS AS INDICATORS OF WATER CONSUMPTION

[Article by Candidate of Geographic Sciences [illegible] Geography Institute of the USSR Academy of Sciences, Moscow] Gidrologiya, Russian, No 6, 1972, submitted 23 October, 1971, pp 83-84]

In this article an effort is made to calculate the estimate of the water content of the glacial regions of the USSR using mass data sources: 1) the annual ablation, 2) the climatic data on the solar radiation, 3) data on the location and morphology of glaciers.

The alpine-glacial and [illegible]-latitude areas of the USSR have been sufficiently covered by atmospheric precipitation and runoff measurement data for objective reasons. At the same time, the glacial regions receive the most snow, and in the majority of cases they have the most water of any parts of the territory. This is indicated by the measurement data the glacial basins primarily by the IGY [International Geophysical Year] and IHD [International Hydrologic Decade] programs [1,3,4,7,8,10,11,13,14,17]. The indirect calculations of [9,16,18] also lead to the same conclusion.

In this article we shall make an effort to calculate an estimate of the water content of all the glacial regions of the USSR. For this purpose the following sources of mass information were used: 1) the annual amplitude of the ablation $A(g/cm^2)$ of snow and ice (by the measurements on the glaciers throughout the world), 2) climatic data on the air temperature in the glaciers from the Katalog lednikov SSR (USSR Glacier Catalog) (Gidrometeoizdat Press) and other sources.

Previously, we [15] proposed an empirical function $A = f(t)$ where t is the mean summer air temperature at an altitude of two meters above the surface of the glacier. At this time, thanks to the efforts of Soviet and foreign glaciologists, the amount of raw data has been increased [9]. By the [illegible] of variables available to us it has been possible to obtain the formula $A = 0.096(t+10)2^{\frac{t}{3}}$ using the least squares method. By the previously proposed equation of a cubic parabola, which does not differ in practice from

USSR

UDC 669.712.051

LYAPUNOV, A. N., KHODAKOVA, A. G., and GALKINA, Z. G.

"Investigation of the Carbonization of Aluminate Solution With $Al(OH)_3$ Priming"

Moscow, Tsvetnyye Metally, No 2, Feb 71, pp 34-37

Translation: It is shown that the rate of separation of aluminum hydroxide from aluminate solution in the process of carbonization with priming ratio I and higher at any given moment is proportional to the supersaturation of the solution in the first degree. Use of priming protects the walls of the vessel from aluminum hydroxide deposits, and also increase grain size. The absorption of the gas carbon dioxide by the solution increases with an increase in the priming ratio.

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USSR

UDC 621.387.322.3

GRINENKO, V. P., and KHODAKOV, V. YE.

"Some Results of a Study of Gas Discharge, Digital Indicators"

V sb. Elementy i ustroystva vychisl. mashin (Elements and Apparatus of Computing Machinery--collection of works), Kiev, 1972, pp 99 - 109 (from RZh Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 73, abstract No 11 A380)

Translation: This article reports the results of a study of the electronic characteristics of types IN-1, IN-2, IN-14A digital indicators. Volt-amphere and probe characteristics are considered. It is noted that volt-ampere characteristics of each gas discharge gap of one lamp differ from one to another, which fact is explained by the differing area and shape of the symbols, as well as the differing distances to the anode.

A family of volt-ampere characteristics is given for several types of indicators, as well as typical probe characteristics in studying probe currents of cathodes next to "hot ones" and cathodes separated by one gas discharge gap. Conclusions necessary for the development of output devices are drawn. Seven illustrations, one bibliographic citation.

1/1

Abstract by O.M.

UDC 666.1/.2:620.178.1

USSR

PAVLUSHKIN, N. M., KHODAKOVSKAYA, R. YA., and SHCHEGLOVA, O. V., Moscow Chemical Engineering Institute imeni Mendeleyev

"Method of Determining the Microbrittleness of Sitals"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 6, Jun 73, pp 738-740

Abstract: The work of crack formation A_k and establishment of a relationship between A_k and bend strength was attempted in this work in order to determine if they could serve as a criterion of microbrittleness in sitals. Sitals of cordierite composition were heat treated at 900, 950, 1000, 1100 and 1200°C. The work of crack formation was determined by the formula:

$$A_k = C \cdot P_k \sqrt{P_k / H_k} \text{ grams-force-cm}$$

where C--constant depending on geometry of diamond pyramid, i.e., ratio of indentation depth h to diagonal d (calculated such that for $h/d = 0.2$, $C = 0.91$); P_k--critical load required to apply to cause formation of crack of specified length; H_k--Vickers hardness of material for load P_k. A crack length of 20 microns was selected as the specified length for test comparison. The method of determining microbrittleness involved measuring total crack length under three loads (100, 150, and 200 grams-force or higher in relation to sital strength, plotting the line of total crack length and determination of critical load P_{k20}.

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PAVLUSHKIN, N. M., et al., Zavodskaya Laboratoriya, Vol 39, No 6, Jun 73, pp 738-740

and calculation of microhardness (average of 10 values) for load P_{k20} and the work of crack formation. It was found that A_{k20} for the investigated sitals varied from 1.4 to 2.8 grams-force-cm and bend strength from 7 to 22 kgf/mm^2. Statistical treatment of the obtained data showed that there was a linear relationship between bend strength and total crack length, P_{k20}, and A_{k20}. 3 figures, 7 bibliographic references.

2/2

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--TESTING NEW FORMS OF THE PREPARATION MURBETOL ON SUGAR BEET PLANTINGS -U-

AUTHOR-(02)-KHODAKOVSKIY, P.P., YEVTUSHENKO, L.S.

COUNTRY OF INFO--USSR

SOURCE--KHIM. SEL. KHOZ. 1970, 8(2), 127-9

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HERBICIDE, AGRICULTURE CROP, SOIL TYPE/(U)MURBETOL HERBICIDE, (U)MC1488 HERBICIDE, (U)MC14PA HERBICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1369 STEP NO--UR/0394/70/008/002/0127/0129

CIRC ACCESSION NO--AP0125017

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125017

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FIELD TESTS WERE MADE ON LOW HUMUS, LEACHED, HEAVY CHERNOZEM; PH OF THE ARABLE SOIL LAYER, 6.4; PH OF SUBSOIL, 7.0; INITIAL WEEDINESS, 47-60 PLANTS-M PRIME2, ANNUAL GRASSES PREVAILING. THE ACTION OF NEW FORMS OF MURBETOL WAS COMPARED AT LEVELS: COMMON, 40, 60, 80 L.-HA; A-1, 16, 22, 27 L.-HA; MC-1488, 6, 9, 12, KG-HA; MC-14PA, 8, 11, 14 KG-HA; CONTROL PLOTS WITH HAND WEEDING, AND PLOTS WITHOUT WEEDING. THE PREPNS. WERE ADDED TO THE SOIL A DAY BEFORE SOWING, AND 3 DAYS AFTER SOWING. THE BEST WEEDKILLING ACTION WAS WITH COMMON MURBETOL, WHICH LEFT ONLY SEVERAL PLANTS-M PRIME2; SLIGHTLY WORSE WITH MURBETOL A-1, AND MARKEDLY WORSE WITH MC-1488 AND MC-14PA.

FACILITY: ULADOVO-LYULINETSKAYA OPYT.-SELEKTS. STA., USSR.

UNCLASSIFIED

KHODAKOVSKIY, Ye. V.

SO: JPRS 55204
16 Feb 72

UDC: 616-082.4.001.2(-22)

EXPERIENCE OF OPERATING AN ORGANIZATIONAL METHODOLOGICAL OFFICE IN A CENTRAL RAYON HOSPITAL (public health)

[Article by Ye.V. Khodakovskiy, chief physician of Mlynovskiy Rayon, Kovenskaya Oblast, T.N. Filippyuk, candidate of medical sciences, assistant to the rayon chief physician for medical care; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 1, 1972, submitted 16 March 1971, pp 32-37]

One of the objectives of public health agencies is to strengthen public health care in rural areas, eliminate the rift between the quality of medical care rendered to urban and rural residents, and to bring specialized medical care as close as possible to the rural population. To fulfill these tasks public health administrators must pursue an indepth analysis of demographic data, information about morbidity rates and losses incurred due to temporary disability, analysis of the state of the network and organizational forms of operating therapeutic and prophylactic institutions, availability of all types of medical care, selection, training, proper placement and rational use of the work force. We refer to a qualitative change in style, forms, and methods of public health management, to giving it scientific substantiation, concreteness, and purposefulness.

The part played by the organizational and methodological office of a central rayon hospital, which is the former's important structural department, is sizable with regard to the fight for a new scientific style in public health management in a rayon. This office is called upon to make a comprehensive study of the physical condition of the people serviced by the hospital and of the state of public health care for the purpose of scientifically substantiated planning of measures directed toward lowering the death and morbidity rates.

The organizational and methodological office of our central rayon hospital arms specialists with the necessary statistical data, it studies the economic system and sanitary hygienic conditions of the rayon, and institutes measures assuring reliability of information obtained on the basis of primary registration and reports of medical institutions, it investigates the health indices (birth, death rates, causes of death and morbidity). Since the organizational methodological office was created and its permanent staff established, the scope as well as forms and methods of operating this hospital department have changed.

Acc. Nr: AP0049122 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR 0079

K

100195x Synthesis and thermal decomposition of dibutoxycumylperoxyboron in n-nonane. Maslennikov, V. P.; Gerbert, G. P; Khodalev, O. F. (USSR). *Zh. Obshch. Khim.* 1970, 40(1), 245 (Russ). $(BuO)_2BCl$ and NaO_2CMe_2Ph gave $(BuO)_2BO_2CMe_2Ph$, d^{20} 0.975, n_D^{20} 1.4707, which is hydrolyzed by moisture at extraordinary rate. Pyrolysis of it in nonane gave 75% $PhMe_2COH$, 20% AcPh, 20% CH_4, 96% esters of H_3BO_3, and 4.5% dinonyl. Hydrolysis of the mixt. gave nonyl alc. indicating the presence, in the decompn. products of borate esters, of the solvent radical component. Evidently in the attack of the peroxide by the nonyl radical a displacement occurs at the cumyloxy grouping. The reaction is free radical. G. M. Kosolapoff

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REEL/FRAME 19800928

7 Nt

USSR

UDC 629.78:621.398

KHODAREV, Yu. K., YEVDOKIMOV, V. P., POKRAS, V. M.

"Statistical Analysis of Information from Long Range Space Vehicles"

Apparatura dlya Kosmich. Issled. [Equipment for Space Studies -- Collection of Works], Moscow, Nauka Press, 1972, pp 239-245, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 9, 1972, Abstract No 9.41.227, from the Resume).

Translation: The statistical characteristics of telemetry information from the "Zond-1" and "Venera-4" space probes are analyzed. The distribution of the number of active channels is calculated using an excess of the channel value above a certain threshold generated by a zero-order predictor as a criterion for channel activity. The distributions are calculated for various values of predictor threshold and for several periods of interrogation of the spacecraft sensors. Data are produced on slight changes in the mean number of active channels during communications sessions at widely differing flight times. The distribution of relative activity of channel groups is calculated. The statistical characteristics studied are used to determine the compression factor for two possible data compression systems. 6 Figures; 2 Tables; 2 Biblio. Refs.
1/1

USSR

UDC: 621.317:621.391.822

KLYUYEV, L. L., MESHKOV, M. N., SOLONENKO, V. G., KHODASEVICH, R. G., CHERDYNTSEV, V. A.

"Comparative Analysis of Instruments for Measuring the Delay Time of Noise-Like Signals"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmeraniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 147-148 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A316)

[No abstract]

1/1

USSR UDC: 621.396.673-423.2

DISKOVSKIY, V. M., KHODATAYEV, Yu. V.

"Equivalent Interelectrode Space in High-Frequency Breakdown of a Loop Antenna"

Radiotekhnika. Resp. mezhved. temat. nauch.-tekhn. sb. (Radio Engineering. Republic Thematic Interdepartmental Scientific and Technical Collection), 1971, vyp. 17, pp 53-57 (from RZh--Radiotekhnika, No 3, Mar 72, Abstract No 3B79)

Translation: Breakdown conditions close to the free end of a bent dipole vehicle antenna are considered. A quantitative relation is established between homogeneous and nonhomogeneous puncture fields by introducing an equivalent interelectrode space, which simplifies calculation of electric strength in the pulse emission mode. One illustration, bibliography of seven titles. Resumé.

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USSR UDC: 621.396.674.3

DISKOVSKIY, V. M., KHODATAYEV, Yu. V.

"Electric Strength of Dipole Antennas in a Rarefied Atmosphere"

Radiotekhnika. Resp. mezhved. temat. nauch.-tekhn. sb. (Radio Engineering. Republic Thematic Interdepartmental Scientific and Technical Collection), 1971, vyp. 17, pp 57-61 (from RZh--Radiotekhnika, No 3, Mar 72, Abstract No 3B37)

Translation: High-frequency breakdown in a rarefied atmosphere close to the free end of a dipole radiator is considered. The equation of continuity is solved by an approximate method, the error in determining the puncture fields being no more than 2% as compared with the method of finite differences. The results of the solution are presented. Two illustrations, bibliography of five titles. Resumé.

1/1

USSR

UDC 621.396.677

ZAYTSEV, A. S., SEREGINA, A. R., and KHODATAYEV, YU. V.

"Experimental Study of the Near Field of Wire Antennas"

Tr. Mosk. energ. in-ta (Works of the Moscow Power Engineering Institute), 1972, vyp.119, pp 128-135 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B5)

Translation: The authors study the near field of vibration type and gamma type, folded dipole antennas. The method of direct field measurement and the method of modulated reemission were used. The measurement equipment is described. An analysis of the obtained results shows that from the point of view of breakdown, the dangerous region is the one adjoining to the face of the vibrator. Original article: five illustrations and three bibliographic entries. N.S.

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1/2 019 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--CORROSION RESISTANCE OF A TITANIUM BASE UNDER A PLATINUM COATING IN RELATION TO ANOLYTE PH -U-

AUTHOR--KHODEKEVICH, S.D., VESELOVSKAYA, I.YE., YAKIMENKO, L.M., GUSKOVA, L.A.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(1), 135-8

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TITANIUM CORROSION, PLATINUM COATING, ELECTROLYTIC OXIDATION, CORROSION TEST, SOLUTION ACIDITY, ANODE POLARIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0757 STEP NO--UR/0364/70/006/001/0135/0138

CIRC ACCESSION NO--AP0104206

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--11SEP70
CIRC ACCESSION NO--AP0104206
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTRO CHEM. AND CORROSION BEHAVIOR OF A TI BASE COVERED BY PT WAS STUDIED AT PH 0-14 AND 80DEGREES. TOW KINDS OF TI ELECTRODES WERE USED, ONE OF WHICH WAS EMERY CLEANED, DEGREASED, TREATED FOR 20 MIN IN H SUB2 SO SUB4 AT 80DEGREES, RINSED IN WATER, DRIED ON FILTER PAPER, AND KEPT IN THE AIR FOR 24 HR BEFORE USE. THIS ELECTRODE WAS CALLED AIR OXIDIZED. THE OTHER ELECTRODES WERE NOT REMOVED FROM THE SOLN. FOLLOWING ANODIC POLARIZATION AND THESE WERE REFERRED TO AS ANODICALLY OXIDIZED. A STUDY OF THE STATIONARY POTENTIAL SHOWED THAT AN INCREASE IN THE PH OF THE ANOLYTE LOWERED THE PASSIVITY OF TI WHICH WAS AT ITS STRONGEST AT PH 13-14. THE STATIONARY POTENTIAL OF PT COATED TI ANODES AT PH 0-13 WERE VERY MUCH ALIKE AND INDEPENDENT OF THE THICKNESS OF THE PT COATING. THE EFFECT OF THE TI BASE OF TH PT COATED ELECTRODE APPEARED ONLY AT PH 14 AND THIN PT COATINGS, 0.1-1.0 MU. IN A STUDY OF ANODIC POLARIZATION OF TI AND PT COATED TI, THE TI IN ALK. AND CARBONATE SOLNS. PARTICIPATED IN THE ANODIC PROCESS THROUGH PORES IN THE PT COATING. AT THE SAME C.D. THE CURRENT DRAIN THROUGH THE TI OF PT COATED ANODES WAS APPRECIABLY HIGHTER AT PH 13 THAN AT PH 9.5 OR 14. UNLIKE AT PH 9.5 AND 14, THE POLARIZATION CURVES AT PH 13 AND 11.6 ON TI AND PT COATED TI WERE ANALOGOUS, BUT THE CURRENT DRAIN THROUGH TI ROSE. THE EXPTL. RESULTS LEAD TO THE CONCLUSION THAT OXION. OF TI IS THP MAIN REASON FOR THE DESTRUCTION OF THE PT COATING IN ALK. AND CARBONATE SOLNS.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--CALCULATING THE PROPERTIES OF LOW LYING STATES OF SPHERICAL NUCLEI -U-

AUTHOR-(02)-SAPERSHTEYN, E.YE., KHODEL, V.A.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(2), 322-33

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEAR ENERGY LEVEL, NUCLEAR SHELL MODEL, CALCULATION, SCATTERING AMPLITUDE, PARTICLE INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/1047 STEP NO--UR/0367/70/011/002/0322/0333

CIRC ACCESSION NO--AP0110737

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0110737

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PROPERTIES ARE CONSIDERED OF LOW LYING STATES WOING TO INTERACTIONS OF QUASI PARTICLES IN UNFILLED SHELLS OF SPHERICAL NUCLEI. AN EQUATION IS OBTAINED EXPRESSING THE AMPLITUDE OF PAIR QUASI PARTICLE INTERACTION T IN TERMS OF THE UNIVERSAL AMPLITUDE G PRIME U OF QUASI PARTICLE SCATTERING TO ANY ANGLE IN THE INFINITE NUCLEAR MATTER. G PRIME U CONTAINS UNIVERSAL LONG RANGE INTERACTION IN ADDN. TO LOCAL INTERACTION PARTS. THE EQUATION FOR THE EFFECTIVE FIELD ACTING UPON THE QUASI PARTICLES IS TRANSFORMED IN SUCH A WAY THAT THE AMPLITUDE G PRIME U ALSO ENTERS AS A UNIVERSAL INTERACTION. PROBLEMS OF PARAMETRIZATION OF G PRIME U ARE ALSO DISCUSSED. FACILITY: INST. AT. ENERG. IM. KURCHATOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 006 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--CALCULATIONS OF NUCLEAR MATRIX ELEMENTS FOR BETA DECAY OF RAE -U-

AUTHOR-(02)-FAYANS, S.A., KHUDEL, V.A.

COUNTRY OF INFO--USSR

SOURCE--PHYS. LETTERS (NETHERLANDS), VOL. 318, NO. 3, P. 99-102 (2 FEB. 1970)
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--MATRIX ELEMENT, BETA DECAY, RADON, CALCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1892/0562 STEP NO--NE/0000/70/003/003/0099/0102

CIRC ACCESSION NO--AP0111755
UNCLASSIFIED

2/2 006 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0111755
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NUCLEAR MATRIX ELEMENTS FOR BETA DECAY OF RAE ARE CALCULATED ON THE BASIS OF THE FINITE FERMI SYSTEMS THEORY. FACILITY: I. V. KURCHATOV ATOMIC ENERGY INST., MOSCOW, USSR.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--NUCLEON INTERACTION AMPLITUDE IN INFINITE NUCLEAR MATTER -U-

AUTHOR-(02)-SAPERSHTEYN, E.YE., KHODEL, V.A.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(4), 760-9

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEON INTERACTION, SCATTERING AMPLITUDE, PARITY PRINCIPLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1936 STEP NO--UR/0367/70/011/004/0760/0769

CIRC ACCESSION NO--AP0120579

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0120579

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROPERTIES OF THE N SCATTERING AMPLITUDE IN INFINITE MATTER BY PLAYING THE ROLE OF UNIVERSAL INTERACTION BETWEEN QUASI PARTICLES IN NUCLEUS, ARE ANALYZED. OWING TO THE ABSENCE OF GALILEAN INVARIANCE, THE NO. OF INDEPENDENT INVARIANT SCATTERING AMPLITUDES IN MATTER INCREASES. GENERAL EXPRESSION FOR THE QUASI PARTICLE SCATTERING AMPLITUDE NEAR THE FERMI SURFACE IS DERIVED, CONTG. 8 (INSTEAD OF 5 IN VACUUM) INVARIANT AMPLITUDES WHICH ARE ANAL. FUNCTIONS OF KINEMATIC INVARIANTS OF THE PROBLEM. GENERAL FORM OF THE N INTERACTION AMPLITUDE IN NUCLEAR MATTER VIOLATING PARITY, IS OBTAINED. STABILITY CONDITIONS OF NUCLEAR MATTER UNDER LONG RANGE COLLECTIVE EXCITATIONS AND COOPER PAIRING, ARE STUDIED. FACILITY: INST. AT. ENERG. IM. KURCHATOVA, MOSCOW, USSR.

UNCLASSIFIED

(1)

USSR

UDC 535.374

BASOV, N. G., DANILYCHEV, V. A., KOLCHANOV, A. G., POPOV, YU. M., and KHODKEVICH, D. D., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Lasers Using the Luminescence of Self-Trapped Excitons in Condensed Inert Gases"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 37, No 3, 1973, pp 494-497

Abstract: The article considers a scheme for the population of the working levels and conditions for the generation of vacuum UV radiation in condensed inert gases excited by a fast electron beam. Experimental data are given on the laser coherence and the efficiency of the conversion of the electron beam energy to radiative energy in liquid xenon.

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USSR

BASOV, N. G., DANILYCHEV, V. A., POPOV, Yu. M., and KHODKEVICH, D. D., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Laser in the Vacuum Region of the Spectrum from the Excitation of Liquid Xenon by an Electron Beam"

Moscow, Pis'ma Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 12, No 10, 20 Nov 70, pp 473-474

Abstract: Experiments to obtain generation in liquid zenon in the vacuum region of the spectrum under excitation by a powerful beam of fast electrons (electron current density up to 200 amp·cm^{-2}) are described. The use of condensed inert elements (Xe, Kr, Ar, Ne, He) to generate in the region of the vacuum ultraviolet was proposed and discussed earlier by the authors, and the development of a laser of condensed inert gases was facilitated by the possibility of achieving a four-level scheme. In previous experiments on the excitation of condensed inert gases and their mixtures by fast electrons the luminescence spectra were observed, the effectiveness of luminescence was evaluated, and weak induced radiation of liquid xenon at the wavelength ~1760 Å was observed. These experiments were made without mirrors and at a low excitation density (maximum electron current density

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BASOV, N. G., et al, Pis'ma Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 12, No 10, 20 Nov 70, pp 473-474

(maximum electron current density was 25 amp·cm^{-2}). In this study the radiation spectrum of liquid xenon was measured for two values of the pumping current density: 150 amp·cm^{-2} and 70 amp·cm^{-2}. At electron current densities of more than 100 amp·cm^{-2} the intensity of the 1760 Å line strongly increases and the half-width of the line reaches 20 Å, which is close to the resolution of the spectrometer, while the half-width of this line at low excitation density was 80 Å. Semitransparent aluminum mirrors deposited on a substrate of lithium fluoride and coated with a protective layer of magnesium fluoride were used as mirrors. It is noted that the application of other inert gases in the condensed state should permit induced radiation over a wide range of wavelengths up to 800 Å.

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USSR

UDC 576.858.25.01(476)

SAMOYLOVA, T. I., VOTYAKOV, V. I., MISHAYEVA, N. P., KHOD'KO, L. P., FEDORCHUK, L. V., VOINOV, I. N., and DANILOVA, G. M., Belorussian Institute of Epidemiology and Microbiology, Minsk

"Detection of Uukuniyemi Virus in the Belorussian SSR"

Moscow, Voprosy Virusologii, No 1, 1973, pp 111-112

Abstract: A strain of Uukuniyemi virus, named Belovezhskiy-Uukuniymi-302, was isolated for the first time in 1970-1971 in Bretskaya Oblast, Belorussian SSR from female Ixodes ricinus. The virus belonged to the ectromelia group, passed through 35-mm Seitz filters without significant titer changes, and apparently the virions had a supercapsular lipoprotein membrane. The virus was highly pathogenic to newborn white mice, much less so to 4-5 gm mice, and nonpathogenic to adult guinea pigs and white rats. Complement-fixation reactions with several specific sera confirmed that this virus belongs to the Uukuniyemi group. Apparently the Belovezhskiy microfocus from which the virus was obtained is part of an extensive focus spreading from the Baltic Sea south to Czechoslovakia and western Ukrainian SSR.

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USSR UDC 621.385.735

LOBOVA, E.V., KHODNEVICH, S.P.

"Oxide Cathodes With Dense Covering Based On A Polymeric Binder"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 8, pp 131-138 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12A91)

Translation: Experience is generalized with respect to the development of the technology for deposition of dense oxide coverings with a binder based on polybutylmethacrylate, and the properties of cathodes with such a covering are investigated. As a result of the comparison conducted of oxide cathodes with a dense (2.8--3g/cm^2) covering, deposited with the use of various binders (colloxylin and copolymer of butylmethacrylate with acrylic or methacrylic acid), it was shown that a nontoxic, non-explosive polymeric binder assures the preparation of durable and stable suspensions for spraying, high elasticity of the covering which makes it possible to perform its mechanical processing, good adhesion of the covering to the core right up to the temperature of the beginning of decomposition of the carbonates, absence of liberation of the gases NO, NO_2 in the process of thermal processing, and absence of carbon residues in the covering after decomposition of the binder. In addition, use of the polymeric binder simplifies the process of preparation of the binder because of the reduction of the number and duration of the operations, while the viscosity of the prepared binder does not change during storage over the course of a year. 4 ill. 16 ref. G.B.

1/1

USSR

FISHMAN, S. N., KHODOROV, B. I., and BOL'KENSHTEYN, M. V., Institute of Molecular Biology, Academy of Sciences, USSR, Moscow; Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences, USSR, Moscow

"Molecular Mechanisms of Changes of the Ionic Permeability of an Electrically Excitable Membrane. II. Model of the Activation Process"

Moscow, Biofizika, Vol 17, No 4, 1972, pp 611-617

Abstract: A model of activation of the Na-conductivity of an excitable membrane during a positive shift of the membrane potential is considered. This model assumes that activating particles exist in the membrane and that due to the effect of the field, these particles undergo a transformation related to the charge displacement. This transformation also brings about a change in the number of calcium ions sorbed by the membrane from solution. By means of the model, it becomes possible to explain the shape of the curve of the relationship of the peak Na-conductivity to the potential on the membrane, the value of the shift of this curve along the voltage axis with a change of the Ca^{++} concentration in the surrounding solution. The model also permits explanation of the influence of an increase of $(Ca)_0$ upon kinetic effects, such as retardation of the growth rate of membrane conductivity $g_{Na}(t)$ during membrane depolarization, and an acceleration of the rate of decrease of $g_{Na}(t)$ during repolarization.

USSR

UDC 615.45.012(075.8)

BABSKIY, Ye. B., ZUBKOV, A. A., KOSITSKIY, G. I., and KHODOROV, B. I.

Fiziologiya Cheloveka (Human Physiology), 2nd Edition, Moscow, Meditsina, 1972, 656 pp

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USSR

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BABSKIY, Ye. B., et al., Fiziologiya Cheloveka, 2nd Edition, Moscow, Meditsina, 1972, 656 pp

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USSR

BABSKIY, Ye. B., et al., Fiziologiya Cheloveka, 2nd Edition, Moscow, Meditsina, 1972, 656 pp

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1/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--IONIC MECHANISMS OF AUTORHYTHMIC ACITIVITY (INVESTIGATION ON MATHEMATICAL MODELS OF EXCITABLE MEMBRANES -U-
AUTHOR-(03)-KHODOROV, B.I., GRILIKHES, R.I., TIMIN, YE.N.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69, NR 4, PP 24-29
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MATHEMATIC MODEL, FROG, CELL MEMBRANE, SODIUM, POTASSIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1728 STEP NO--UR/0219/70/069/004/0024/0029

CIRC ACCESSION NO--AP0106457
UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0106457
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INVESTIGATION WAS CARRIED ON MATHEMATICAL MODELS OF MEMBRANES OF THE GIANT AXON AND RANVIER'S NODE OF FROG. AUTORHYTHMIC ACTIVITY OCCURS ONLY IN SUCH A RATIO OF PARAMETERS OF IONIC PERMEABILITY DURING WHICH: 1) THE INWARD IONIC CURRENT AT REST STARTS TO EXCEED THE OUTWARD CURRENT TO A VALUE SUFFICIENT FOR THE DEVELOPMENT OF REGENERATIVE DEPOLARIZATION OF THE MEMBRANE AND 2) DURING THE DEVELOPMENT OF SPIKE THE OUTWARD CURRENT (POTASSIUM AND LEAKAGE) INCREASES UP TO VALUES SUFFICIENT FOR COMPLETE REPOLARIZATION (OR HYPERPOLARIZATION OF THE MEMBRANE. IN THE GIANT AXON THE FIRST CONDITION MAY BE FULFILLED BOTH BY AUGMENTING THE SODIUM CONDUCTION (GNA) AND AS THE RESULT OF DECREASING THE POTASSIUM CONDUCTANCE (G) SUBK AT THE RESTING POTENTIAL. IN RANVIER'S NODE THE INCREASE OF THE SODIUM PERMEABILITY (PNA) IS OBLIGATORY. THE FREQUENCY OF THE SEQUENCE OF IMPULSES DEPENDS ON THE DEGREE OF INITIAL CHANGES OF IONIC PERMEABILITY (CONDUCTANCE) OF THE MEMBRANE AND, TO A GREATER MEAUSRE, ON THE TIME CONSTANT OF THE POTASSIUM PERMEABILITY, TAU SUBN. THE LATTER IS CONDITIONED BY THE FACT THAT THE STEEPNESS OF INCREASE OF INTERSPIKE DEPOLARIZATION (PACEMAKER POTENTIAL) IS LARGELY DEPENDENT UPON THE RATE OF DECREASE OF G SUBK (OR P SUBK) AFTER THE END OF ACTION POTENTIAL. IN THE INSTANCE OF EXCESSIVE RISE OF GNA OR VERY MARKED DECLINE OF G SUBK THE RHYTHMIC DISCHARGE ACQUIRES A DAMPING CHARACTER, SINCE IN BOTH CASES THE PROCESS OF REPOLARIZATION OF THE MEMBRANE, NECESSARY FOR ELIMINATION OF INACTIVATION, PROVES TO BE INADEQUATE. FACILITY: A. A. VISHNEVSKY INSTITUTE OF SURGERY, MOSCOW.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--THEORETICAL ANALYSIS OF THE MECHANISMS OF NERVE IMPULSE CONDUCTION ALONG A NONUNIFORM AXON. II. CONDUCTION OF A SINGLE IMPULSE THROUGH A
AUTHOR-(04)-KHODOROV, B.I., TIMIN, YE.N., VILENKIN, S.YA., GULKO, F.B.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 140-6

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SQUID, NEURON, MATHEMATIC MODEL, NARCOTIC, CALCIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0628 STEP NO--UR/0217/70/015/001/0140/0146

CIRC ACCESSION NO--AP0117854
UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0117854
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE NERVE IMPULSE CONDUCTION ALONG A FIBER REGION WITH ALTERED MEMBRANE PROPERTIES WAS STUDIED ON A MATH. MODEL OF SQUID GIANT AXON. THE EFFECTS OF TETRODOTOXIN, NARCOTICS, AND CA PRIME2 POSITIVE WERE CONSIDERED. FACILITY: A. V. VISHNEVSKII INST. SURG., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 669.71.046.44

KHODOROV, YE. I., BARBAKADZE, L. G.

"Cooling Alumina Cakes in Drum Coolers"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 70, pp 72-81 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G125)

Translation: A method of thermal calculation of drum coolers for cooling alumina cakes is discussed, and research data for the experimental coefficients are processed. The calculated analysis of operation of a specific drum cooler is performed as a function of the variation of the basic defining factors. There are 2 illustrations and 2 tables.

1/1

USSR

UDC 669.71.046.44

KHODOROV, Ye. I.

"Basic Laws of the Sintering Process in Rotary Kilns"

Tr. Vses. n.-i. i proyektn. in-ta alyumin., magn. i elektrodn. prom-sti (Works of the All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and Electrode Industry), 1970, No 70, pp 64-71 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G124)

Translation: The basic laws and mutual relation of the processes of movement of material and gases, combustion and heat exchange and physical-chemical conversion occurring during sintering of alumina charges in rotary kilns are investigated. Conclusions are drawn regarding the means of developing rotary kilns, improving their structural and operating characteristics and intensifying the sintering process. The bibliography has 6 entries.

1/1

USSR

UDC 621.314.61(088.8)

KHODOROV, YU. E.

"Device For Protection Of Rectifier Load"

USSR Author's Certificate No 256050, filed 7 June 68, published 23 Mar 70 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B480P)

Translation: A circuit for protection of a rectifier is patented, which assures limitation of the emergency discharge current of the capacitors of a filter and does not require use of controlled rectifiers [ventil']. The capacitor of a ripple filter is connected to the negative terminal of the rectifier across a semiconductor diode, the conductivity of which corresponds to the sign of the current of the capacitor charge. In order under operating conditions for current to proceed in both directions across the capacitor, an additional low-voltage rectifier producing the necessary displacement current is connected across a limiting resistor to the above-mentioned semiconductor diode. In the case of a breakdown in the load of the rectifier, the discharge current of the ripple filter can only flowacross the circuit of the additional low-voltage rectifier where it is limited by the resistor. 1 ill. L.R.

1/1

1/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EFFECT OF HYDROGEN ON THE STRUCTURE AND PROPERTIES OF ALLOY VT5L -U-

AUTHOR-(05)-KOLACHEV, B.A., KHODOROVSKIY, G.L., POPOV, A.A., BUKHANOVA, A.A., SEDOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--LITEINOE PROIZVOD. 1970, 2, 29-30

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TITANIUM ALLOY, ALLOY DESIGNATION, ALLOY COMPOSITION, HYDROGEN EMBRITTLEMENT, METAL CONTAINING GAS, GAS CONTAINING METAL, MECHANICAL PROPERTY, HYDRIDE, METAL MICROSTRUCTURE/(U)VT5L TITANIUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1678 STEP NO--UR/0128/70/002/003/0029/0030

CIRC ACCESSION NO--AP0118656

UNCLASSIFIED

2/2 033 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118656

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TI ALLOY CAONTAINED AL 5.05-5.34, FE 0.08-0.14, SI 0.06, O 0.04-0.1, N 0.015-0.017, C 0.09-0.10, AND H 0.003-0.006PERCENT. THE MECH. PROPERTIES WERE STUDIED AT MINUS 70 TO 20DEGREES FOR A H CONTENT OF 0.003-0.05PERCENT. AT THESE TEMPS. THE ALLOY BECAME BRITTLE WHEN THE H CONTENT WAS GREATER THAN 0.035PERCENT. HOWEVER, IF THE ALLOY WAS EXPOSED TO MINUS 60DEGREES FOR 3 DAYS IT BECAME BRITTLE AT LOWER H LEVELS. THE EMBRITTLEMENT WAS CAUSED BY HYDRIDE FORMATION, WHICH WAS OBSD. IN THE MICROSTRUCTURE WHEN THE H CONTENT EXCEEDED THE SOLY. LIMIT. THE STRENGTH OF THE ALLOY INCREASED AS THE H CONTENT INCREASED TO 0.015PERCENT, BUT AT A H LEVEL ABOVE THIS VALUE THE STRENGTH DECREASED.

UNCLASSIFIED

the original point of entry. This was no longer true in the situation in which the isotropy was preserved in all factors, such as temperature, chemical composition of water, currents, illumination, and absence of sound, but not in magnetic properties of the environment. In this case, a reliable preference was observed for one of the predominant directions with respect to the remaining two. On the basis of successful experiments conducted with the magnetic effect, it was concluded that the described method may be applied with equal success to the determination of susceptibility of various objects to various environmental factors.

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USSR UDC 612.08:519.24

KHODOROV, B. I., GRILIKHES, R. I., and TIMIN, Ye. N., Institute of Surgery imeni A. V. Vishnevskiy, Academy Medical Sciences, SSSR, Moscow

"Ion Mechanisms of Autorhythmic Activity Studies on Mathematical Models of Excitable Membranes"

Moscow, Byulleten' Eksperimentalnoy Biologii i Meditsiny, No 4, 1970, pp 24-29

Abstract: Studies of mathematical models of membranes of the giant axon and nodes of Ranvier were conducted on frogs. Autorhythmic activity occurs only when the ratios of parameters of ion permeability are as follows 1) the incoming ion current at rest starts to exceed the outgoing current by a value sufficient for the development of regenerative depolarization of the membrane, and 2) during the development of spike the outgoing current (potassium and leakage) increases to values sufficient for complete repolarization (or hyperpolarization) of the membrane. In the giant axon the first condition may be fulfilled both by increasing sodium conductivity (g_{Na}) and decreasing potassium conductivity (g_K) at the resting potential. In the nodes of Ranvier an increase of sodium permeability (P_{Na}) is obligatory. The impulse repetition rate depends on the degree of initial changes of ion permeabilities (conductivity) of the membrane and, to a greater measure, on the time constant of potassium permeability, t_n. The latter is due to the fact that the steepness of increase of interspike depolarization ("pacemaker potential") is largely dependent

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KHODOROV, B. I., et al., Byulleten' Eksperimentalnoy Biologii i Meditsiny, No 4, 1970, pp 24-29

upon the rate of decrease of g_K (or P_K) after the end of action potential. In the instance of an excessive rise of g_{Na} or a very marked decline of g_K the rhythmic discharge acquires a damping character, since in both cases the process of repolarization of the membrane, necessary to eliminate inactivation, proves to be inadequate.

USSR

KHODOROV, B. I. and TIMIN, YE. N., Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR, Moscow

"Theoretical Analysis of Mechanisms of Nerve Impulse Propagation Along a Nonuniform Axon. III. Transformation of Rhythms in the Cooled Region of the Fiber"

Moscow, Biofizika, Vol 15, No 3, May/Jun 70, pp 503-512

Abstract: The ionic mechanism of rhythm transformation in the cooled region of the squid giant axon were investigated using the Hodgkin-Huxley nerve model. Computations have shown that the lengthening of the refractory period is the cause of the periodic nerve impulse blockade. This lengthening is induced not only by cooling itself (reduction of all alpha and beta rate constants but also by the increase of sodium inactivation (drop of h) and potassium conduction (gK) in the course of rhythmic activity. As a result of lengthening of the refractory period, each succeeding impulse arises in an earlier refractory period than the preceding one. Therefore it is propagated with a decrement, and is completely extinguished if the cooled region of the axon is long enough. But if it is short, then the low amplitude action potential excites the membrane in the normal sections of the fiber and induces a fullsized spike. The latter propagates not only forward, but also induces a retrograde depolarization wave, which increases and lengthens the action

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KHODOROV, B. I. and TIMIN, YE. N., Biofizika, Vol 15, No 3, May/Jun 70, pp 503-512

potentials in the cooled zone. As a result of this retrograde wave, the propagation of the next spike is inhibited. A considerable propagation of impulses in the cooled region induces (electrotonically) the lengthening of the falling phase of the spikes in the sections of axon lying just before the cooled zone. At the same time, the amplitude of these spikes is reduced owing to strengthening of the local hyperpolarizing current which originates in the cooled region where the impulse initiation is slowed down.

1/2 010 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--IMPROVEMENT IN ROTARY FURNACES FOR ROASTING CARBONACEOUS MATERIALS -U-

AUTHOR-(03)-KHODOROV, E.I., MIKHLIN, A.E., EPSHTEIN, B.L.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(2) 37-9

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ROASTING FURNACE, COKE, ANODE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1918 STEP NO--UR/0136/70/043/002/0037/0039

CIRC ACCESSION NO--AP0108247

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2/2 010 UNCLASSIFIED

CIRC ACCESSION NO--AP0108247 PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPERATION OF A 3-M DIAM TIMES 44-M LONG ROTARY FURNACE USED FOR PRODUCING ANODE MATERIALS WAS STUDIED, AND MATERIAL AND HEAT BALANCES WERE MADE. THE REACTIONS ARE SHOWN WHICH MAY BE RESPONSIBLE FOR THE LOSS OF COKE. THE EXHAUST GASES CONTAIN ONLY A SMALL AMT. OF CO; THIS INDICATES THAT THE REACTION, C PLUS O SUB2 EQUALS CO SUB2, MAY PREDOMINATE. THE REDUCE COKE LOSSES THE C MUST BE PREVENTED FROM INTERACTING WITH THE AIR O SUB2. INCREASING THE FUEL RATE, LOWERING THE HEATING TEMP., AND INCREASING THE GAS TIGHTNESS OF THE KILN DO NOT DECREASE THE COKE LOSS. IT IS RECOMMENDED THAT THE GASES FROM THE FIRE BOX CONTAIN MOSTLY CO SUB2, H SUB2 O, AND N SUB2.

UNCLASSIFIED

KHODOS, M.A.

JPRS 58764

17 April 1973

DISPOSAL OF RADIOACTIVE WASTES

Collection of papers sponsored by the State Committee for the Use of Atomic Energy of the USSR, 1972, Moscow

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TECHNICAL-ECONOMIC COMPARISON OF THE METHODS OF SOLIDIFICATION AND LONG-TERM STORAGE FOR HIGHLY ACTIVE LIQUID WASTES FROM THE PROCESSING OF SPENT FUEL ELEMENTS OF WATER-COOLED WATER-MODERATED POWER REACTORS

(Paper by L. G. Azarnayeva, Z. G. Ilina, A. N. Kolosov, A. N. Konobeyev, M. A. Rhodes, and A. A. Khonikevich, State Committee for the Use of Atomic Energy of the USSR (Radium Institute imeni V. G. Khlopin), Russian. IAEA publication SM-136/31, Moscow, 1972)

The development of atomic power engineering imposes on the specialists of all countries engaged in this problem a great responsibility to future generations with respect to reliability of rendering radioactive wastes from a complex of enterprises serving this branch of industry harmless.

Naturally, the greatest difficulties arise in handling wastes of a high level of activity, the quantity of which is continuously increasing [U].

For each million kilowatts of installed electric power of atomic reactors, in the processing of TVEL (fuel elements) of the VVER (water-cooled water-moderated power reactor) type approximately 40 cubic meters per year of such wastes are formed.

For rendering wastes of a high level of activity harmless by radioactive decay, storage for several hundred years is required. Aside from this it is known that the storage of wastes of a high level of activity in the form of solutions is costly, complicated, and unreliable, since it is necessary to cool them for a long time to remove the heat liberated in the decay of the radioactive elements, and also to ventilate the tanks with air for dilution of the hydrogen formed due to radiolysis of the solution. In connection with the fact that the service life of the storage spaces amounts to 20--25 years, the construction of additional tanks is required, to replace those which have broken down. Concern about the construction and operation of storage spaces

in this case are transferred to following generations. It is natural that the idea of enclosing radioactive wastes in glasses and bitumens that are only slightly soluble in water is entirely logical, as these substances may be reliably buried for a prolonged period without great expenditures on the operation of storage spaces. However, the majority of scientists consider that enclosure in bitumen is permissible only for wastes with a specific activity of less than 10 curies per liter. At a greater specific activity swelling and fouling of the bitumen is observed, because of the liberation of gases formed as a result of radiolysis. The storage spaces for bitumen must be made with an explosive-proof design, since one of the basic gases liberated is hydrogen [2, 3]. For more active solutions (> 10 curies per liter) obtained in the processing of TVEL from atomic reactors with a high burnup of fuel, vitrification is a more reliable method.

In this work a technical and economic comparison of two methods of handling highly active wastes is performed: storage in tanks and vitrification with subsequent storage of the glass blocks. (A comparison with the method of pumping wastes into deep formations of the earth's crust is performed in a work by V. I Spitsin and others.)

In the Soviet Union and in other countries several methods of vitrification of liquid wastes with a high level of activity are being developed, which differ in technology and design of the apparatuses, but all of them may be conditionally divided into two groups: single-stage and two-stage processes.

Single-stage processes are simpler with respect to formulation of the apparatus, but, however, their operation is very complicated, the service life of the apparatuses is insignificant, in connection with the fact that in the process of digesting glass at a temperature of 900--1000 degrees C a contact of the nitric-acid solutions and the nitrogen oxides in the water vapors with the walls of the apparatuses occurs.

It appears more feasible to conduct the process of vitrification in two stages: to perform dehydration and calcination at comparatively low temperatures (350--400° C), and to form the glass at high temperatures (900--1000° C). One of such methods is the method being developed in the Soviet Union [6], with respect to which the process of drying and calcination is performed in an apparatus with a boiling layer, and the process of vitrification in a ceramic (concrete) crucible by means of an induction current.

A technical-economic analysis of the method of storing solutions is considered in detail in a paper by V. I. Spitsin and others. In this paper, an analysis is made of only the method of vitrification and a comparison of it with the storage of solutions.

USSR

UDC: 620.193.41

SOLOK, A. M., KHODOS, R. S., KUZNETSOV, V. M.

"Corrosion Resistance of the Alloys EI-435 and EI-437B in a Mixture of Nitric and Hydrofluoric Acids"

Moscow, Zashchita Metallov, Vol 9, No 3, Jul-Aug 73, pp 437-439.

Abstract: This article studies the influence of concentration, composition and temperature of the solution on the general and intercrystalline corrosion of EI-435 and EI-437B alloys in a mixture of nitric and hydrofluoric acids. The specimens were produced by open induction melting and vacuum-arc remelting. Both general and intercrystalline corrosion of both alloys were observed. The vacuum arc remelted metal corrodes significantly more strongly in all cases and has a significantly higher tendency toward intercrystalline corrosion than the open melted metal. An increase in the concentration of F- ions causes greater general corrosion at all concentrations of nitric acid studied.

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USSR

UDC 632:576.851.55

GVOZDYAK, R. I., LIPSHIVTS, V. V., and KHODOS, S. F.

"New Disease of Common Hornbeam (Carpinus betelus L.) Caused by Anaerobic Bacteria"

Kiev, Doklady Akademii Nauk Ukrains'koy SSR, Seriya B. Geologiya, Geofizika, Khimiya i Biologiya, No 11, 1971, pp 1,034-1,036

Abstract: Samples of hornbeam with tubercular growths were investigated. Leaves of trees were artificially infected with bacterial suspension. Fungi were not found in the infected areas, so it was concluded that anaerobic bacteria were instrumental in the infection process. Three Clostridium strains were isolated. It was concluded that the described symptoms indeed represent a new kind of plant disease of a cancer-tubercular variety. The disease is caused by Clostridium bacteria. This is the first time that the phyto-pathogenic properties of Clostridium bacteria have been identified.

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UNCLASSIFIED

TITLE--LOCAL LEVELS IN HEXAGONAL SELENIUM -U- PROCESSING DATE--16OCT70

AUTHOR-(04)-KOLOMYETS, B.T., BANDROVSKAYA, I.K., TSYGELNAYA, N.N., KHODOSEVICH, P.K.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 387-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--SELENIUM, ACTIVATION ENERGY, FORBIDDEN BAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0937 STEP NO--UR/0449/70/004/002/0387/0388

CIRC ACCESSION NO--AP0116446

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--16OCT70

2/2 019

CIRC ACCESSION NO--AP0116446

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. DATA INDICATE, CONTRARY TO ASSUMPTION, THAT THERE ARE NOT 2 OR 3 GROUPS OF DISCRETE LOCAL LEVELS IN THE FORBIDDEN BAND OF HEXAGONAL SE; THE TEMP. DEPENDENCE (T EQUALS 83-300DEGREESK) OF THE COND. (DETD. BY A CYCLING METHOD) INDICATES THAT THE FORBIDDEN BAND OF HEXAGONAL SE HAS A MORE COMPLICATED STRUCTURE WITH A CONTINUOUS SPECTRUM OF THE LOCAL LEVEL DISTRIBUTION. THERE CAN EXIST INTERVALS WITH AN ELEVATED D. OF LEVELS IN THIS SPECTRUM; SUCH INTERVALS APPEAR IN THE MEASUREMENT OF THE THERMOSTIMULATED COND. THE ACTIVATION ENERGY, 0.25 EV, CORRESPONDS TO THE DARK COND. THE TEMP. DEPENDENCE MEASURED AFTER A CYCLE OF ILLUMINATION AT 83DEGREESK, QUICK HEATING, AND SLOW COOLING, GAVE ACTIVATION ENERGIES OF 0.075, 0.090, AND 0.13 EV IN 3 CONSECUTIVE CYCLES. FACILITY: L'VOV. TORG.-EKON. INST., LVOV, USSR.

UNCLASSIFIED

USSR

UDC 621.382.3

MOLCHANOV, A. A., KHODOSH, L. S.

"Effect of Mobility as a Function of the Transverse Field on MOS Transistor Characteristics"

Kiev, Izvestiya VUZ -- Radioelektronika, Vol 13, No 7, 1970, pp 892-895

Abstract: Practically all mathematical models of MOS transistors described in literature are constructed on the assumption that the effective mobility of charge carriers in the channel is constant, but such models yield substantial errors in a broad range of gate voltages. This brief communication derives the equation for the characteristics of MOS transistors in the non-saturated region with the substrate charge taken into account, and analyzes the causes of the divergence between the model proposed in an earlier work (Crawford, R. H., "MOSFET in Circuit Design" New York, 1967) and experimental results. This model is the basis of the equation derived in the communication, where it is assumed that the mobility of the charge carriers in the channel is a function of the transverse field at the semiconductor surface according to an empirical formula. The disparity between theoretical and experimental curves for the MOS output characteristics are explained by the drop in mobility along the longitudinal field. Curves of the characteristics

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USSR

MOLCHANOV, A. A., et al., Izvestiya VUZ -- Radioelektronika, Vol 13, No 7, 1970, pp 892-895

for the model proposed in this communication and for the constant mobility model compared with the experimentally plotted characteristic show the first to be far closer to the experimental curve than the second.

AA0052386

UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 2-70

243496 TIMBER LOADING MECHANISM comprises a receiver mounted at the base of a two-sectional elevator, and including a drum (5) with grabs (6) in front of which are several screw conveyors (2) fitted with a side panel (4). The front screw conveyor, situated above the others has an opposite thread. This construction of the receiver ensures orientated delivery of the timber. For the even arrangement of the loading at the end of the removing section of the elevator there is a probe (8) which interacts with the end switch when touching the logs packed into a truck having a reciprocating movement

16.6.67. as 1164640/27-11, KHODOSOVSKII, M.V. S.M. Kirov Belorussian Tech. Inst. (22.9.69) Bul. 16/4.4.69. Class 81e, Int. Cl. B 65g.

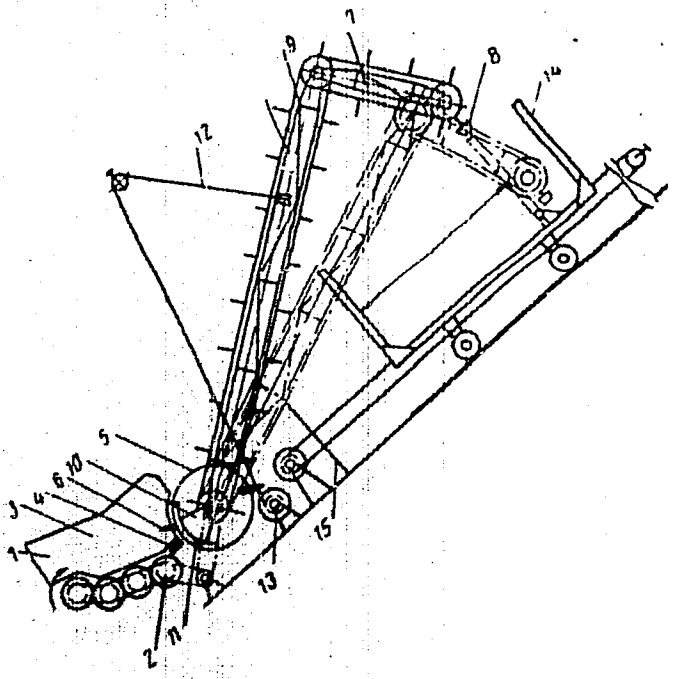
18

1/2

19820982

AA0052386

Belorusskiy Tekhnologicheskiy Institut im. S. M. Kirova



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19820983

1/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--STUDY OF THE SELF DIFFUSION OF HYDROGEN IN THE ZIRCONIUM,HYDROGEN SYSTEM BY THE NUCLEAR MAGNETIC RESONANCE, NMR, METHOD -U-
AUTHOR--KHODOSOV, E.F.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, FEB. 1970, 29, (2), 415-418

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--NMR SPECTRUM, GAS DIFFUSION, HYDROGEN, ZIRCONIUM, ZIRCONIUM HYDRIDE, ACTIVATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
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2/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0129580

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SELF DIFFUSION OF H IN ZR-H SAMPLES OBTAINED BY THE HYDROGENATION OF IODIDE TYPE ZR WAS STUDIED BY THE NMR METHOD, AND CORRELATED WITH THE COMPOSITION OF THE CORRESPONDING MATERIALS. THUS FOR ZRH SUB1.92 THE ACTIVATION ENERGY WAS 12 KCAL-MOLE AND THE PRE EXPONENTIAL FACTOR IN THE DIFFUSION EQUATION 10 PRIME NEGATIVE7 CM PRIME2-SEC. ON REDUCING THE PROPORTION OF H THE PREEXPONENTIAL FACTOR ROSE SLIGHTLY AND THEN FELL TO ITS FORMER VALUE, WHILE THE ACTIVATION ENERGY FELL TO 10 KCAL-MOLE FOR ZRH.

UNCLASSIFIED

UDC 547.785.5+542.95

USSR

ZUBAROVSKIY, V. M., KHODOT, G. P.

"New 1,5-Substituted 2-Methylbenzimidazols"

Kiev, Ukrainskiy Khimicheskiy Zhurnal, Vol XXXVIII, No 6, 1972, pp 594-597

Abstract: In order to perform a systematic study of the optical and photographic properties of imidacyanins, new pigments of this class were synthesized which contain the 4,5,6,7-tetrahydro-2-benzthiazolyl radical and the vinyl group, and the properties of these pigments were compared with those described previously [V. M. Zubarovskiy, et al., ZhOKh, No 32, 1581, 1962; Kh. getrots. soyed., No 1, 571, 1965] for their analogs with two-benzthiazolyl radical and substituted vinyl groups. The procedure used to obtain the necessary bases and quaternary salts for the synthesis is described. The absorption peaks of all the pigments were determined in ethyl alcohol using the SF-10 spectrophotometer. Replacement of the 2-benzthiazolyl radicals in 1,1'-diphenyl-3,3'-diethyl-5,5'-di(2-benzthiazolyl)-imidacarbocyaniniodide by tetrahydro-2-benzthiazolyl radicals leads only to an insignificant shift (2 nm) of the light absorption peak to the shortwave side of the spectrum. More intense coloring of the given pigment is observed on replacing both of its 2-benzthiazolyl radicals by vinyl groups. Comparison of the light absorption peaks of imidacarbocyanin containing two vinyl groups of the substitutions with the absorption peak of 1,1'-diphenyl-3,3'-diethylimidacarbocyaniniodide (509 nm) not having substitutions in the